REMARKS

According to the Office Action of August 22, 2007, claims 24-26 and 28-32 have been examined and have been rejected. Specifically, claims 24-26 and 28-32 have been rejected as purportedly failing to comply with the enablement and written description requirements.

In response to the Office Action of August 22, 2007, Applicants submit this Amendment, which amends claims 24, 28 and 29, adds new claims 33-35 and cancels claims 25, 26 and 30. Claim 27 was previously cancelled. No new matter has been added by these amendments. In view of the amendments to the claims and remarks below, Applicants respectfully request that these rejections be reconsidered and withdrawn.

Rejection under 35 U.S.C. § 112, First Paragraph, Enablement

Claims 24-26 and 28-32 have been rejected under 35 U.S.C. § 112, first paragraph, as purportedly failing to enable one skilled in the art to make and use the recited invention. This rejection is now moot as to claims 25, 26 and 30 because these claims have been cancelled. Applicants respectfully request, in view of the amendments and remarks below, that the enablement rejection asserted against claims 24, 28, 29, 31 and 32 be reconsidered and withdrawn.

On page 3, the Office Action contends that "preimmunization of Lewis rats with a peptide consisting of *M. tuberculosis* hsp65 86-100 provided a barely noticeable reduction in adjuvant-induced arthritis (AA) severity, and preimmunization of Lewis rats with a peptide consisting of *M. tuberculosis* hsp65 256-270 provided a more substantial reduction in both AA and CP20961-induced arthritis severity." Applicants have amended claim 24 to delete "... corresponding amino acids in the same relative position in one of the sequences 81-100...."

On pages 3 and 4, the Office Action contends that the specification does not disclose treatment of any disease. Applicants respectfully disagree because the specification provides ample information on how to treat a disease with the claimed invention. Moreover, "when considering the factors relating to a determination of non-enablement, if all the other facts point toward enablement, then the absence of working examples will not by itself render the invention non-enabled." MPEP § 2164.02. Applicants have provided examples in the specification. For instance, page 20 of the specification states that "protection was observed

after preimmunization with mycobacterial hsp65 256-270." The fact that the specification does not discuss data from human studies is immaterial to the issue of enablement or written description. It is customary within the art to perform studies on rats or mice, and extrapolate the data to humans, as was done in this case. The fact that rats were studied instead of humans does not reduce the value of the examples provided.

That the specification discusses reduction of severity of adjuvant-induced arthritis does not make the invention's application to the outbred human population unclear, or non-enabled. Van Peijvelde *et al.* ("Induction of Oral Tolerance to HSP60 or an HSP60-Peptide Activates T Cell Regulation and Reduces Atherosclerosis", Atherosclerosis, Thrombosis, and Vascular Biol., J. Am. Heart Assoc. (2007)) demonstrate significantly decreased size in the plaques of mice suffering from atherosclerosis when they were treated with one of the recited peptides (hsp60 253-268). Hence, the successful treatment on a species other than a rat has been demonstrated. Furthermore, a person of ordinary skill in the art would find no reason why the recited invention could not be used in humans. This is also demonstrated by Kamphuis *et al.* ("Tolergenic immune responses to novel T-cell epitopes from heat-shock protein 60 in juvenile idiopathic arthritis," Lancet (2005) 366: 50-56). Kamphuis demonstrates an immune response in humans when treated with one of the recited peptides (hsp60 254-268).

On page 4, the Office Action contends that since the mechanism by which the claimed method would function is not understood, the specification does not enable one of ordinary skill in the art. This rationale has no bearing on the enablement test. "An inventor need not understand precisely why his invention works in order to achieve an actual reduction to practice." *Parker v. Frilette*, 174 U.S.P.Q. 321, 324 (CCPA 1972); see also MPEP § 2138.05. Likewise, an applicant need not explain how the invention works in order to enable a person of ordinary skill in the art to make and use the claimed invention. Therefore, even assuming that Applicants in this case have not explained the mechanism, this has no bearing on enablement or patentability of the claimed invention.

Anderton *et al.* ("Peptide-based immunotherapy of autoimmunity: a path of puzzles, paradoxes and possibilities," Immunology (2001) 104: 367-376) does not relate to the predictability within the art. Anderton is directed to an altered peptide ligand. The peptides discussed in Anderton are not heat shock proteins, or hsp60. The invention as recited in the amended claims are directed to peptides derived from hsp60, have at least the

amino acid sequence of PLXIIAE, LXIIAED, XIIAEDV, IIAEDVX, IAEDVXG, AEDVXGE, DVXGEAL, VXGEALS, XGEALST, GEALSTL, EALSTLV, ALSTLVV, LSTLVXN or STLVXNX (wherein X is any amino acid). After considering Anderton, one skilled in the art would not question the ability to practice the recited invention because Anderton does not address the recited peptides. Therefore, Anderton does not evidence the amount of experimentation needed to practice the recited invention.

For these reasons, Applicants respectfully request that the enablement rejection be reconsidered and withdrawn.

Rejection under 35 U.S.C. § 112, First Paragraph, Written Description

Claims 24-26 and 28-32 have been rejected under 35 U.S.C. § 112, first paragraph, as purportedly not being described in the specification in a manner that reasonably conveys to a skilled artisan that the inventors, at the time that the application was filed, had possession of the claimed invention. This rejection is now moot as to claims 25, 26 and 30 because these claims have been cancelled. Applicants respectfully request, in view of the amendments and remarks below, that the written description rejection asserted against claims 24, 28, 29, 31 and 32 be reconsidered and withdrawn.

On pages 5 and 6, the Office Action contends that there is insufficient written description to show that Applicants were in possession of the invention as recited in claim 24. As the Applicants understand this rejection, it relates to the recitation of the peptides. The recitation of the peptides has been amended to:

> ... a peptide of 7-30 amino acids derived from the sequence 241-270 of SEQ ID NO. 1 representing the sequence of the stress protein hsp65 of *Mycobacterium tuberculosis*, said peptide comprising one or more of the amino acid sequences selected from the group consisting of PLXIIAE, LXIIAED, XIIAEDV, IIAEDVX, IAEDVXG, AEDVXGE, DVXGEAL, VXGEALS, XGEALST, GEALSTL, EALSTLV, ALSTLVV, LSTLVXN and STLVXNX, wherein X is any amino acid.

On pages 6 and 7, the Office Action contends that the specification and claims as originally filed did not provide support for a method of treating a Th1-mediated disease. Applicants have deleted the recitation that the "disease is Th1 mediated" from the claims.

On page 7, the Office Action contends that a peptide of 7-30 amino acids is not found in the specification. Applicants respectfully disagree because support for this limitation is found in the originally filed specification. For example, page 6 of the specification recites that the "synthetic peptides are prepared identical to the microbial

sequence (5-30 amino acids), each peptide overlapping with at least 4 amino acids of these identical regions." Another example is found on page 8 of the specification, which recites:

> [W]ith preference, the peptides comprise at least 6 or even 7, aminoacids with the same relative positions as those in the hsp65 T cell epitopes. Those epitopes are especially those which have at least 4 consecutive aminoacids which are identical with the corresponding mammalian hsp60 aminoacids. ... In particular, the peptide comprises 5-30 aminoacids of the amino acid sequence of hsp65.

Claim 24 is supported by at least these exemplary sections of the originally filed specification.

For these reasons, Applicants respectfully request that the written description rejections be withdrawn.

Conclusion

In view of the amendments to the claims and above remarks, Applicants respectfully request that the rejections asserted in the Office Action of August 22, 2007 be reconsidered and withdrawn, and that all pending claims be allowed.

Respectfully submitted,

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